

WHAT IS CLAIMED IS:

- 1 1. An apparatus for preparing a fluid sample, the
- 2 apparatus comprising:
 - 3 a) a first part including
 - 4 i) a pipette tip having an open tip end, and
 - 5 ii) a sample cup, fluidly coupled with the
 - 6 pipette tip and having an open end; and
 - 7 b) a second part including
 - 8 i) a channel for receiving the pipette tip of
 - 9 the first part,
 - 10 ii) a support for accommodating at least a
 - 11 portion of the sample cup of the first part, and
 - 12 iii) a constricted passage, arranged between the
 - 13 channel and the support, for collapsing the
 - 14 pipette tip of the first part as the first part
 - 15 is inserted into the second part.
- 1 2. The apparatus of claim 1 wherein the pipette tip is
- 2 formed of a collapsible material.
- 1 3. The apparatus of claim 1 wherein the pipette tip is
- 2 formed of a flexible and collapsible material.
- 1 4. The apparatus of claim 1 wherein the pipette tip of the
- 2 first part and the constricted passage of the second part
- 3 are designed such that, as the pipette tip passes through
- 4 the constricted passage, walls defining the pipette tip
- 5 collapse inwardly and form a liquid seal.

1 5. The apparatus of claim 1 wherein a length of the
2 channel of the second part is at least as long as a length
3 of the pipette tip of the first part.

1 6. The apparatus of claim 1 wherein the open end of the
2 sample cup of the first part is dimensioned to mate with an
3 automated pipetting system.

1 7. The apparatus of claim 1 wherein the support of the
2 second part is shaped to match a bottom of the sample cup
3 of the first part.

1 8. The apparatus of claim 1 wherein the support of the
2 second part is shaped to guide the pipette tip of the first
3 part to the constricted passage of the second part as the
4 first part is inserted into the second part.

1 9. The apparatus of claim 1 wherein the support of the
2 second part is shaped as a funnel.

1 10. The apparatus of claim 1 wherein the support of the
2 second part is tapered.

1 11. A method for preparing an aliquot using a combination
2 including (a) a first part having a pipette tip, the
3 pipette tip holding a fluid sample, and a sample cup,
4 fluidly coupled with the pipette tip, and (b) a second part
5 having a channel, a support, and a constricted passage
6 arranged between the channel and the support, the method
7 comprising:

8 a) inserting the pipette tip of first part into the
9 second part;
10 b) collapsing the pipette tip with the constricted
11 passage, such that the fluid sample held in the
12 pipette tip is forced upward into the sample cup; and
13 c) receiving, with the channel, the collapsed portion
14 of the pipette tip.

1 12. The method of claim 11 further comprising a step of:
2 d) supporting, with the support, at least a portion
3 of the sample cup.

1 13. The method of claim 11 further comprising a step of:
2 a1) pipetting, from a liquid sample source, the fluid
3 sample into the pipette tip.

1 14. A sample aliquot pipette tip for use with a part
2 including a channel, a support, and a constricted passage
3 arranged between the channel and the support, the sample
4 aliquot pipette tip comprising:

5 a) a pipette tip having an open tip end; and
6 b) a sample cup, fluidly coupled with the pipette tip
7 and having an open end.

1 15. The sample aliquot pipette tip of claim 14 wherein the
2 pipette tip is formed of a collapsible material.

1 16. The sample aliquot pipette tip of claim 14 wherein the
2 pipette tip is formed of a flexible and collapsible
3 material.

1 17. The sample aliquot pipette tip of claim 14 wherein the
2 pipette tip and the constricted passage of the part are
3 designed such that, as the pipette tip passes through the
4 constricted passage, walls defining the pipette tip
5 collapse inwardly and form a liquid seal.

1 18. The sample aliquot pipette tip of claim 14 wherein a
2 length of the pipette tip is no longer than a length of the
3 channel of the part.

1 19. The sample aliquot pipette tip of claim 14 wherein the
2 open end of the sample cup is dimensioned to mate with an
3 automated pipetting system.

1 20. The sample aliquot pipette tip of claim 14 wherein a
2 bottom of the sample cup is shaped to match the support of
3 the part.

1 21. A tip aliquot support for use with a part including a
2 pipette tip, and a sample cup, the tip aliquot support
3 comprising:

- 4 a) a channel for receiving the pipette tip of the
5 part;
- 6 ii) a support for accommodating at least a portion of
7 the sample cup of the part; and
- 8 iii) a constricted passage, arranged between the
9 channel and the support, for collapsing the pipette
10 tip of the part as the part is inserted into the tip
11 aliquot support.

1 22. The tip aliquot support of claim 21 wherein the
2 pipette tip of the part and the constricted passage are
3 designed such that, as the pipette tip passes through the
4 constricted passage, walls defining the pipette tip
5 collapse inwardly and form a liquid seal.

1 23. The tip aliquot support of claim 21 wherein a length
2 of the channel is at least as long as a length of the
3 pipette tip of the part.

1 24. The tip aliquot support of claim 21 wherein the
2 support is shaped to match a bottom portion of the sample
3 cup of the part.

1 25. The tip aliquot support of claim 21 wherein the
2 support is shaped to guide the pipette tip of the part to
3 the constricted passage as the part is inserted into the
4 tip aliquot support.

1 26. The tip aliquot support of claim 21 wherein the
2 support is shaped as a funnel.

1 27. The tip aliquot support of claim 21 wherein the
2 support is tapered.

1 28. A system for preparing an aliquot from a fluid sample
2 source, the system comprising:
3 a) a first part including
4 i) a pipette tip having an open tip end, and
5 ii) a sample cup, fluidly coupled with the
6 pipette tip and having an open end;

7 b) a second part including
8 i) a channel for receiving the pipette tip of
9 the first part,
10 ii) a support for accommodating at least a
11 portion of the sample cup of the first part, and
12 iii) a constricted passage, arranged between the
13 channel and the support, for collapsing the
14 pipette tip of the first part as the first part
15 is inserted into the second part; and
16 c) an automated pipetting system for receiving the
17 first part, drawing a fluid sample from the fluid
18 sample source, and inserting the first part into the
19 second part.

1 29. The system of claim 28 further comprising:
2 d) a printer for printing an identification on the
3 first part.

1 30. The system of claim 29 wherein the identification is
2 machine readable.

1 31. The system of claim 29 wherein the identification is
2 printed on the sample cup of the first part.

1 32. The system of claim 28 wherein the fluid sample source
2 is provided with an identification, the system further
3 comprising:
4 d) a reader for reading the identification;
5 e) a first transporter for transporting fluid sample
6 sources past the automated pipetting system;

7 f) a second transporter for transporting fluid sample
8 sources to the automated pipetting system; and
9 g) a diverter for selectively diverting a fluid
10 sample source from the first transporter to the second
11 transporter based on the identification read by the
12 reader.

1 33. The system of claim 32 wherein the identification is a
2 bar code, and
3 wherein the reader is a bar code reader.

1 34. The system of claim 32 wherein the first transporter
2 is a primary conveyer, and
3 wherein the second transporter is a secondary
4 conveyer.

1 35. The system of claim 34 wherein the secondary conveyer
2 defines a upstream junction with the primary converter, and
3 wherein diverter is a gate arranged at the
4 upstream junction.

1 36. The system of claim 35 wherein the reader is arranged
2 adjacent to the first conveyer upstream of the upstream
3 junction.

1 37. The system of claim 32 further comprising a stop gate
2 for stopping a fluid sample source on the second
3 transporter at a position accessible by the automated
4 pipetting system.

1 38. The system of claim 32 further comprising:

2 h) a printer for printing an identification on the
3 first part based on the identification read by the
4 reader.

1 39. The system of claim 38 wherein the identification
2 printed on the first part is a bar code.

1 40. In a system including (a) a first part having a
2 pipette tip and a sample cup fluidly coupled with the
3 pipette tip, (b) a second part having a channel for
4 receiving the pipette tip of the first part, a support for
5 accommodating at least a portion of the sample cup of the
6 first part, and a constricted passage, arranged between the
7 channel and the support, for collapsing the pipette tip of
8 the first part as the first part is inserted into the
9 second part, and (c) an automated pipetting system, a
10 method for preparing an aliquot comprising:

11 a) receiving, with the automated pipetting system,
12 the first part;
13 b) drawing, using the automated pipetting system and
14 the received first part, a fluid sample from a fluid
15 sample source; and
16 c) inserting the first part into the second part.

1 41. In a system including (a) a first part having a
2 pipette tip and a sample cup fluidly coupled with the
3 pipette tip, (b) a second part having a channel for
4 receiving the pipette tip of the first part, a support for
5 accommodating at least a portion of the sample cup of the
6 first part, and a constricted passage, arranged between the
7 channel and the support, for collapsing the pipette tip of

8 the first part as the first part is inserted into the
9 second part, and (c) an automated pipetting system, a
10 method for preparing an aliquot comprising:

- 11 a) receiving, with the automated pipetting system,
12 the first part;
- 13 b) positioning the pipette tip of the first part
14 above a fluid sample source;
- 15 c) immersing the pipette tip of the first part into
16 the fluid sample source;
- 17 d) drawing, using the automated pipetting system and
18 the received first part, a fluid sample from the fluid
19 sample source;
- 20 e) removing the pipette tip of the first part from
21 the fluid sample source;
- 22 f) positioning the first part above the second part;
23 and
- 24 g) inserting the first part into the second part.

1 42. The method of claim 41 wherein the act of inserting
2 the first part into the second part includes:

- 3 i) inserting the pipette tip of first part into
4 the second part;
- 5 ii) collapsing the pipette tip with the
6 constricted passage, such that the fluid sample
7 held in the pipette tip is forced upward into
8 the sample cup; and
- 9 iii) receiving, with the channel, the collapsed
10 portion of the pipette tip.

1 43. The method of claim 42 further comprising:

2 h) supporting, with the support, at least a portion
3 of the sample cup.

1 44. The method of claim 40 further comprising steps of:
2 - transporting the fluid sample source;
3 - reading an identification associated with the fluid
4 sample source; and
5 - selectively diverting the fluid sample source to
6 the automated pipetting system based on the
7 identification read.

1 45. An apparatus for preparing a fluid sample, the
2 apparatus comprising:
3 a) a first part including
4 i) a pipette tip having an open tip end, and
5 ii) a sample cup, fluidly coupled with the
6 pipette tip and having an open end; and
7 b) a second part including
8 i) a test tube, and
9 ii) a cap fitted on an open end of the test
10 tube, the cap including a top surface for
11 accommodating at least a portion of the sample
12 cup of the first part, the top surface having a
13 constricted passage defined through it, for
14 collapsing the pipette tip of the first part as
15 the first part is inserted into the second part.

1 46. The apparatus of claim 45 wherein the top surface of
2 the cap of the second part is shaped as a funnel.

1 47. The apparatus of claim 45 wherein the top surface of
2 the cap of the second part is tapered.

1 48. A tip aliquot support for use with a part including a
2 pipette tip, and a sample cup, the tip aliquot support
3 comprising:

4 a) a test tube for receiving the pipette tip of the
5 part; and
6 b) a cap, the cap having a top surface for
7 accommodating at least a portion of the sample cup of
8 the part, wherein the top surface has a constricted
9 passage defined through it, for collapsing the pipette
10 tip of the part as the part is inserted into the tip
11 aliquot support.

1 49. The tip aliquot support of claim 48 wherein the top
2 surface of the cup is shaped to match a bottom portion of
3 the sample cup of the part.

1 50. The tip aliquot support of claim 48 wherein the top
2 surface of the cap is shaped to guide the pipette tip of
3 the part to the constricted passage as the part is inserted
4 into the tip aliquot support.

1 51. The tip aliquot support of claim 48 wherein the top
2 surface of the cup is shaped as a funnel.

1 52. The tip aliquot support of claim 48 wherein the top
2 surface of the cup is tapered.

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